that in cuttings of *Ampelopsis quinquefolia*, as in those of certain species of *Salix*, the continual removal of the young shoots was soon followed by a less vigorous development of roots, and *vice versâ*. In *Salix* the retarding influence is first apparent in the roots, while in *Ampelopsis* the shoots were found to be the more sensitive.

Dr. F. F. Blackman and Miss Matthaei contributed a paper on natural surgery in leaves (*Annals Bot.*, 1901). If patches of leaf-tissue be killed in any way, the leaf reacts by forming an "absciss"-line round the injured spots at a little distance off in the healthy tissue. Separation soon takes place at this "absciss" line, so that the dead tissue which might be a source of danger is cut right round and drops out of the leaf. The same authors gave a paper on the relation between CO_2 production and vitality. This communication chiefly dealt with the effect of loss of water upon the CO_2 production in leaves. Even a small loss of water causes a very marked increase of the CO_2, and this effect continues until the water is restored

On the absorption of ammonia from polluted sea-water by *Ulva latissima*, by Prof. Letts and John Hawthorne. In a previous research (*Proc.* Roy. Soc. Edin. 1901) it was shown that the occurrence of this sea-weed in quantity in a given locality is associated with the pollution of the sea-water by sewage, the evidence being of three kinds: (1) The high proportion of nitrogen contained in the tissues of the *Ulva*; (2) an examination of certain localities in which the sea-weed occurs in abundance, and of others from which it is virtually absent; and (3) experiments on the assimilation of nitrogenous compounds by the growing *Ulva* from sea-water artificially polluted.

The following conclusions were drawn from recent experiments:—(1) The absorption of ammonia by the sea-weed is very rapid, and with the mixtures used practically all the ammonia was absorbed in five hours (with one exception, when 75 per cent. was lost). (2) The amount absorbed is greatest during the first hour of contact, and then rapidly falls off. (3) Although the concentration of the ammonia exercises some effect on the proportion absorbed, it is by no means so considerable as might have been expected. (4) The sea-weed absorbs ammonia both in daylight and in darkness, but the proportion in the latter case is rather less than in the former. (5) The effects of an increased area of the sea-weed on the proportion of ammonia absorbed are not so great as might have been expected. These results may be of practical importance in those districts where a serious nuisance results from the decay of large quantities of the *Ulva*, which have been washed ashore, or have accumulated in shallow water.

The diameter increment of trees, by A. W. Borthwick. There are two methods by which the rate of growth in thickness or diameter increment of trees can be ascertained. One of these methods is to measure annually or at certain intervals the diameter or circumference by means of tree callipers or a tape. The only other method of investigating the diameter increment on standing trees is by means of a very useful instrument known as Pressler's increment-borer. Mr. Borthwick stated that through the kindness of Prof. Bayley Balfour he had recently had the opportunity of testing whether the increment-borer would yield the same results as those furnished by the tape. A comparison of results showed a close agreement between the two methods.

Dr. R. J. Anderson described an apparatus for studying the rate of flow of solutions in plant stems, and gave a preliminary account of experiments on which he is at present engaged.

On the strength and resistance to pressure of certain seeds and fruits, by Prof. G. F. Scott Elliot. The author described experiments which he had made in order to determine the amount of weight which seeds can endure without breaking. The experiments were generally conducted by means of a spring balance weighing up to 50 lbs.; seeds and fruits which withstood a pressure of 50 lbs. were tested with a Wicksteed's single-lever vertical testing machine. The paper dealt also with the relation between the resisting power and the shape and structure of seeds. Attention was called to various peculiarities of fruits and seeds which serve as important aids to their resisting power.

Forestry.—Mr. Samuel Margerison communicated a paper on the transport of British timber. He drew attention to the fact that imported fir sold at a less price than that at which British fir can be delivered, and urged the desirability of bearing in mind the question of transport in the scientific development of our forests.

Mr. G. P. Hughes gave an account of Government plantings in the Isle of Man.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—Mr. David B. Monro, Provost of Oriel, succeeds the Rev. Dr. Fowler, President of Corpus Christi College, as Vice-Chancellor.

CAMBRIDGE.—The moderators for the mathematical tripos, 1902, are Mr. W. Burnside, F.R.S., Pembroke, and Mr. J. Greaves, Christ's. The examiners are Mr. J. G. Leathem, St. John's, and Mr. J. H. Grace, Peterhouse.

The outgoing Vice-Chancellor, Mr. Chawner, Master of Emmanuel College, in his valedictory address, stated that the amount received for the Benefaction Fund was more than 66,000*l.* This, though it falls short of what is required even for the pressing needs of the University, has made it possible to enter into contracts for the Botany School, and a substantial portion of the Medical School buildings. Dr. Lawrence Humphry has been appointed assessor to the regius professor of physic, and Sir R. S. Ball an elector to the Isaac Newton scholarships. Prof. W. R. Sorley has been elected to a professorial fellowship at King's College. Prof. Somerville has informed the Vice-Chancellor that, having accepted a post in His Majesty's Board of Agriculture, he will resign the chair of agriculture at the end of the present term. Mr. K. Lucas, of Trinity College, has been nominated to occupy the University table in the Marine Biological Laboratory at Plymouth. Mr. J. H. Jeans, second wrangler 1898, Smith's prizeman 1901, and Mr. H. A. Wilson, research student in physics 1899, have been elected to fellowships at Trinity College.

IN delivering the opening address of the winter session of St. Andrews University last week, Principal Donaldson spoke on the subject of Mr. Carnegie's recent gift and the relation of the universities to the trade and commerce of the country. With reference to the first part of his subject Principal Donaldson said that the gift of Mr. Carnegie rendered it possible for every Scotsman to obtain a university education if he was capable of it; its second purpose was to increase the usefulness and influence of the Scottish universities by furnishing them with lectureships, laboratories, scholarships of research, and every form of equipment that could enable them to do their work most effectively. It was impossible to estimate the value of this part of the gift, of the possibilities which it created, and of the good that it would do to the whole community. It would bring all the various departments of study up to a high level, and especially it would promote in the highest degree original inquiry and investigation. For want of means they had fallen behind in this department, but the difficulties were now removed. Every student who had the ability to conduct original research would have his opportunity, and they might expect Scotland to take a foremost place in those scientific discoveries and inventions which were the prominent feature of our age.

SPEAKING on Saturday last to the Medical Faculty of University College, Liverpool, Prof. Oliver Lodge, F.R.S., Principal of Birmingham University, said a year ago he did not expect to find the full University ideal so prominently to the front; but any hesitation that might have been felt at urging it too hastily or inopportunely had been removed by the resolution of their council—their college council and likewise their city council—that a University for Liverpool was a necessity, and that any step towards furthering of that object would be welcome. The multiplication of municipalities, said Dr. Lodge, was wholly good. Why should the multiplication of Universities be considered bad? Let every city become a University when it was worthy, but it must make itself worthy first. Proceeding, he said that one of the functions of a University was the increase or improvement of knowledge, what was called "research." The ancient formula of the Royal Society stated that it existed "for the improvement of natural knowledge." He commended to their notice this word "improvement." Their primary aim should be improvement. The guardians of knowledge must be improvers of it, else it began to decay and to be lost. A University was the corporate repository of learning, not of ancient learning only, but of modern learning too; the most recently discovered fact of science there found its natural guardians, and there it was that new facts should be born. He commended this notion of "improvement of knowledge" to students, to every class of student. An atmosphere of constant effort towards the

improvement of knowledge, with the accompanying stimulus of potential discovery; this was the atmosphere that should enfold every earnest student who entered the portal of a modern University.

THE new department of pathology of the University of Oxford was formally inaugurated on Saturday last. The building, which has been erected at the cost of about 10,000*l.* (5000*l.* of which was the gift of Dr. Ewan Fraser, of Balliol College), occupies a site at the back of the University Museum. It is rectangular in shape, measuring 75 feet by 65 feet, and consists of a basement and two storeys, the rooms being grouped round central vestibule. Amongst the latter are a lecture room, a museum, laboratories for the teaching of morbid histology and of bacteriology, research rooms for work in experimental pathology and in chemical pathology, and various store rooms, attendant's work room, workshop, and cold-room are also provided. Sir William Church, president of the Royal College of Physicians, in delivering the opening address, said that the eightieth anniversary of the birthday of the Nestor of pathological research, Prof. Virchow, being that day celebrated. Oxford could not in a more worthy way pay its homage to the veteran man of science. Just at the time that their museum was being erected, Prof. Virchow gave to the world his memorable work, "Die Cellular Pathologie," which placed pathology on a new foundation and taught them to regard pathological processes as the perversion of physiological ones, influenced by various disturbing agencies. Pathology could not be studied without physiology, neither could physiology in its completeness be carried on without pathology, and more especially had this become manifest since they had been acquainted with the part played by micro-organisms in the universe, and the influence they had on living structures. A knowledge of both physiology and pathology was indispensable for those who would practise medicine; but to regard pathology as a mere adjunct to medicine was to take a narrow and erroneous view of the processes of nature. As a physician he could not but regard with extreme satisfaction the addition which had been made to the opportunities afforded to their medical graduates for the acquisition of scientific knowledge, but he was far from looking upon the technical work which would be done in direct connection with medicine as the only, or, indeed, the main, advantage which would accrue from it. Pathology at the present time was, above all others, that section of medical science which offered the widest promise of progress, and by the original research which under the guidance of the able head of their pathological department would there be carried on, he trusted that real advances in knowledge might be made which both directly and indirectly might benefit mankind, and that in pathology, as in the other departments of science, Oxford might hold an honourable record.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, October 7.—M. Bouquet de la Grye in the chair.—On the extension of a formula of Euler and on the calculation of the principal moments of inertia of a system of material points, by M. K. Bohlin.—General properties of couples of kinematic elements, by M. G. Kœnigs.—The action of urethane on pyruvic acid, by M. L. J. Simon. Pyruvic acid combines directly with urethane without the use of any condensing agent, the compound $CH_3.C(NH.CO_2C_2H_5)_2CO.OH$ being formed. The ethyl ester of this substance can also be obtained by condensation of ethyl pyruvate with urethane, but in this case a little hydrochloric acid is necessary to assist the reaction Boiling with dilute acid readily regenerates the pyruvic acid.—On monobromomalonic dialdehyde, by M. R. Lespieau. This substance is formed by the action of bromine in bright sunlight upon the substance $CHBr:CBr.CH_2OCH_3$. Owing to its forming a potassium salt it was at first taken for an acid, but its aldehydic nature is clearly established by its reactions with Schiff's reagent, and the formation of phenylbromopyrazol with phenylhydrazine.—On the reducing properties of certain nitric esters, by MM. Leo Vignon and F. Gerin. The nitric esters derived from methyl and ethyl alcohols, glycol and glycerol do not reduce an alkaline copper solution. Tetranitroerythritol possesses faintly reducing properties whilst a strong reduction is produced by the nitrates of dulcitol and mannitol.—Experimental researches on the excitability of the spinal marrow, by M. Alex. N. Vitznou. It is shown that, contrary to the results of previous experimenters, the grey matter of the spinal column can be excited by electric currents, and that there is a clear difference between the reactions which are produced as a consequence of the stimulation of the antero-lateral cords and those resulting from the stimulation of the grey matter, the latter producing generally tetanic movements. The grey substance can also be excited by simply mechanical means, if care be taken that there is as little loss of blood as possible during the preliminary operation.—The influence of spermotoxin upon reproduction, by Mlle. C. de Leslie. If some spermotoxic serum furnished by a guinea-pig is injected into a white mouse, the latter loses its power of reproduction, the sterility being maintained for from sixteen to twenty days.—On the liberoligneous elements of ferns, by MM. C. Eg. Bertrand and E. Cornaille.—Double flowers and parasitism, by M. Marin Molliard. In two cases (*Primula officinalis* and *Scabiosa Columbaria*) in which a tendency to form double flowers was observed, it was found that the roots were attacked by parasitic fungi, and it appears very probable that it is to these parasites that the changes in the flowers must be attributed. The author points out that these facts may have important applications in practical horticulture.—An experimental contribution to the study of the physical signs of intelligence, by M. N. Vaschide and Mlle. M. Pelletier. As the result of measurements made on more than 300 children it was found that the cephalic development of the intelligent subjects was different from an anthropological point of view from the unintelligent subjects. The most marked difference is in the magnitude of the auriculo-bregmatic measurement.

CONTENTS.

PAGE

The Engineering Laboratory 597
A New Surveying Instrument 598
Our Book Shelf:—
"Results of Meteorological Observations made at the Radcliffe Observatory, Oxford, in the Eight Years 1892-99" 599
Herbert: "The Telephone System of the British Post Office" 599
Morrison: "Maps: their Uses and Construction. A Short Popular Treatise on the Advantages and Defects of Maps on Various Projections, followed by an Outline of the Principles involved in their Construction."—**A. J. H.** 599
Bernadou: "Smokeless Powder, Nitro-cellulose and Theory of the Cellulose Molecule."—**J. S. S. B.** . 600
Oates: "Catalogue of the Collection of Birds' Eggs In the British Museum (Natural History)."—**R. L.** 600
Letters to the Editor:—
The Colours of Guillemots' Eggs.—**Captain G. E. H. Barrett-Hamilton** 600
Addresses of Authors of Scientific Papers.—**Prof. Sydney J. Hickson, F.R.S.** 601
The Recent Inverness Earthquake.—**Rev. Dr. Andrew Henderson** 601
The Virchow Celebration. By **F. W. T.** 601
The Recent Work at Stonehenge. (*Illustrated.*) By **Lady Antrobus** 602
Bird Life in the Canaries and South Africa. (*Illustrated.*) By **R. L.** 603
The Report of the Thompson Yates Laboratories. (*Illustrated.*) By **R. T. H.** 604
Notes 605
Our Astronomical Column:—
The Spectroscopic Binary η Pegasi 609
The Hamburg Meeting of the German Association 609
Prizes for Researches in Medical Science 610
Chemistry at the British Association 611
Engineering at the British Association. By **T. H. B.** 612
Anthropology at the British Association 614
Botany at the British Association 615
University and Educational Intelligence 619
Societies and Academies 620